has not met with any serious measure of success. It would appear that wind-motors have not yet been subjected to much scientific study. As regards the old type of windmill with four sails, as is usually seen in the eastern counties of England, the rules given by Smeaton in the year 1759, as the result of experiments, embody the chief data available.

The modern or "American" windmill forms the subject of the last two chapters. Many interesting constructional details are given, as well as particulars of tests on the power developed and the cost thereof when applied to different industrial purposes. These chapters can be recommended to those who desire to acquaint themselves with this somewhat out-of-the-ordinary branch of modern mechanics. C. C. G.

NEUROLOGY.

Functional Nerve Diseases. By A. T. Schofield. Pp. iv + 324. (London: Methuen and Co., n.d.) Price 7*s.* 6*d.* net.

DURING recent years Dr. Schofield has written many books on different forms of nervous disorder, but the present volume is one of the most interesting. Here he deals with the so-called "functional" nerve diseases. This term "functional," although open to many objections, is a useful one, for by it we can convey that the ailment in question belongs to that class of disease which is independent of gross morbid anatomy changes. The author states it thus:—"that organic changes exist when life has passed but functional changes have then all disappeared." Later, he goes on to say that "disease, *au fond,* has always a material basis, whether recognisable or not, and 'functional' and 'organic' are but expressions of our ignorance that will one day be superfluous." The "Psychology of the Brain" is the subject-matter of one of the opening chapters. Dr. Schofield does not attempt to go deeply into any psychological problems; in truth, he deals with this subject almost too widely to be entirely helpful to the reader. He divides the brain into three main divisions:—(1) The cortex, as the seat of the spirit or directing intelligence; (2) the mid-brain, the seat of the soul or the mere active animal life; (3) the lower-brain, which is the seat of the body or the mere physical existence. The author definitely states that he writes this book from the dualist standpoint; "that is, in the belief that mind is not the product of matter, but distinct from it, and that life is mind in action." He urges upon the student to get rid of the idea that *consciousness* is mind or that it is the only proof of mind. "Mind," he writes, "may be conscious, subconscious, or unconscious." But he only uses these terms provisionally until it is possible for the student to understand that mind means *all* mind, and not only that part of it which we choose to call consciousness. When discussing the general ætiology of functional nerve diseases Dr. Schofield writes:—

"In functional disease the underlying change is often in the association of cells rather than their structure, for we must remember that the association of neurons is not organic but functional."

He deals with the varied recognised factors in the causation of this class of disorder, and among these he mentions the influence of "suggestion." This, he says, may be from oneself (auto-suggestion) or from others, but the former is the more frequent. When treating with the causes of hysteria, the author recites the various views held by recognised writers. He regards "heredity" as the principal and general predisposing cause of neurasthenia, a prominent factor being alcoholism in the ancestry of the patient. The author gives a useful chapter on the symptoms of neurasthenia, but he adds nothing new to the subject. When dealing with "psychotherapy" the various objections to it in this country are referred to, and Dr. Schofield evidently deplores that the influence of the mind over the body is not more fully taught to students at the hospital. He denies that "suggestibility" is a symptom of hysteria, as taught by Charcot, and points out that it is often easiest in the sound and the sane, more difficult in the neurasthenic or hysteric, and almost impossible in the insane. We do not agree with the views that he expresses on the importance of massage in all cases, for we are convinced that this treatment is very harmful to some patients as merely increasing the nervo-muscular irritability. Taken as a whole, the book is well written and full of useful information, and it will be found to contain many suggestions which will prove of value to the thoughtful student.

OUR BOOK SHELF

Trout Waters: Management and Angling. By Wilson H. Armistead. Pp. x+203. (London: Adam and Charles Black, 1908.) Price 3*s.* 6*d.* net.

THIS is a pleasantly discursive little book, which is obviously based upon considerable personal observation and experience on the part of the author. We doubt, however, whether Mr. Armistead was altogether wise in avoiding all books of reference, as he states himself to have done; a book of reference would have prevented the same mollusc from figuring as "*Limnaeus peregra*" and "Limnea" in consecutive paragraphs.

The advice given as to improving and protecting trout in various waters is on the whole sound and sensible; the suggestions that minnows introduced to feed large trout may seriously compete with smaller trout for the available food supply, and that eels are dangerous enemies of the ova and fry of trout and may do more harm than pike or perch, are fair examples of the many practical matters touched upon. It is a pity that no directions are given as to simple and inexpensive forms of hatching apparatus, such as Herr Jaffé's "floating redd," which would seem well suited for use in many such waters as are considered in the work now under consideration.

It is when Mr. Armistead touches upon the natural history of the Salmonidæ that the lack of books of reference is most apparent. The statement that "fry hatched from eggs taken from wild parents are, though strong and healthy, difficult to rear on account of their inherited wildness" is somewhat startling. A chapter is devoted to the consideration of the question whether the presence of trout in a salmon river is or is not a disadvantage, and the question is treated in a thoughtful manner; it is, however, a little surprising to learn, not only that migratory

Salmonidæ will and do continually cross with the river trout, thus making the identification of the offspring difficult, but that "the difficulty of identification is increased when one has to deal with quarter-breeds or with the progeny of a half-bred trout and salmon and a full-bred salmon." The last quoted statement is unsupported by any evidence save that the author has seen brown trout "doing duty on the salmon redds," and occurs in a chapter in which it has already been stated that "the spawning seasons of the two fish (trout and salmon) seldom coincide." We cannot help thinking that the existence of these "quarter-breeds" is the merest matter of speculation, and believe that no serious angler or ichthyologist will credit their existence until specimens have been submitted to expert examination.

The general get-up and printing of the book is worthy of the publishers whose name it bears, but the use of the back of a map, showing existing hatcheries, as an advertising space for one of these hatcheries is to be deprecated. L. W. B.

The Lore of the Honey-Bee. By Tickner Edwardes. Pp. xxiv+281. (London: Methuen and Co., n.d.) Price 6*s*.

THIS book begins with an entertaining account of the curious beliefs about bees held by the ancients and in the Middle Ages, such as their spontaneous generation from the carcass of an ox, as recorded by Virgil and others, and the government of the colony by the queen and her subordinates.

"The single large bee, which all knew to exist in each hive, was generally looked upon as the absolute ruler of the community. It is variously described as a king or queen by writers in the sixteenth and seventeenth century, but only in the sense of a governor; and the word chosen largely depended on the sex of the august person who happened to occupy the English throne at the time."

The greater part of the work consists of a picturesque description of different aspects of bees and bee-keeping at the present day. Mr. Edwardes is a charming writer, and the now well-ascertained facts of bee-life are prettily treated by his romantic pen. The author thinks that the "atmosphere of poetry and romance ought to be held inseparable, now as ever, from a craft which is probably the most ancient in the world." Mr. Edwardes's argument that bees are guided by reason rather than by instinct is not confirmed by close observation.

As regards the commercial possibilities of bee-keeping, the author truly says that "tons of honey are annually running to waste. All this could be garnered and sold to the people at little trouble and great profit." And "just as there is nothing like leather, beeswax holds its own as a marketable commodity in spite of paraffin substitutes."

The last chapter of the book is devoted to showing how admirably bee-culture is adapted to the practice of the simple life.

There are twenty-four fine full-page photographs.

F. W. L. SLADEN.

Elements of Water Bacteriology, with Special Reference to Sanitary Water Analysis. By Prof. S. C. Prescott and Prof. C. E. A. Winslow. Pp. xii+258. Second edition, re-written. (New York: John Wiley and Sons; London: Chapman and Hall, Ltd., 1908.) Price 6*s*. 6*d*. net.

THE sanitary examination of water supplies by bacteriological methods is becoming of increasing importance. In this country extensive researches have been, and are being, carried out for the Local Government Board, for the Sewage Commission, and for the Metropolitan Water Board. In America also much attention and research are being devoted to the bacteriological examination of waters, and the book under review gives a good summary of American views, procedure, and technique relating to this subject. On the whole, British and American procedures are very similar, and the characters which are recognised by both as belonging to the typical *Bacillus coli*, so important a factor in all examinations, agree fairly closely. This is important, as it renders results obtained in both countries more comparable than otherwise might be the case.

In the first chapter the natural bacterial flora of waters, its variation under different conditions, and influences modifying it, are discussed. The quantitative bacteriological examination of water is considered in the next and succeeding chapters, namely (1) the estimation of the number of organisms that develop aërobically on gelatin at room temperature (20° C.); (2) the estimation of the number of organisms that develop aërobically on agar at blood heat (37° C.); and (3) the search for the *Bacillus coli*, and its isolation and quantitative estimation if present. As regards *Bacillus coli*, the American standard seems to be more lenient than ours; for it is suggested that only if this organism is present in 1 c.c. or under should the water be considered to be unsafe. The chapter on the significance of *Bacillus coli* is well thought out and instructive.

Finally, the methods of isolation of the *Bacillus welchii* (*enteritidis sporogenes*), streptococci and pathogenic organisms such as *Bacillus typhosus* and *Vibrio cholerae* are fully discussed. The book can be recommended as a very useful one and a great improvement on the first edition; the numerous tables, formulæ for media, and bibliography enhance its value. R. T. HEWLETT.

The National Physique. By A. Stayt Dutton. Pp. xii+188. (London: Baillière, Tindall and Cox, 1908.) Price 5*s*. net.

A CONSIDERABLE practice in different parts of England and Wales has enabled Mr. Dutton to form an idea of the causes and remedies of the physical deterioration of which we hear so much nowadays. The book he has produced is a sensible little brochure, remarkably free from technicalities, and easily understood by the man in the street. It deals with the elementary questions of physiology which underlie the teachings of hygiene, and gives a good deal of practical advice on the measures to be adopted (diet, fresh air, exercise, pure water, disinfection, and the like) which would ensure the health of the people and the improvement of the race.

The main underlying idea of the book is the importance of anæmia as a factor in the causation of a deterioration of the national physique, and the consequent importance of improvement in the state of the blood in any efforts to counteract malnutrition and its consequences. The old idea that "the blood is the life" is now relegated to advertisements of quack remedies; but there is no doubt that impoverishment of the nutrient stream is a readily available guide in any state of poor development or enfeebled health, whatever the ultimate cause of such a condition may be. The author in some cases, perhaps, pushes his idea too far, as, for instance, when he regards anæmia as the prime moving cause in producing myopia. Still, the book is, as before stated, on the whole, judicious and well-balanced. We can only hope that its precepts may be taken to heart by the people at large, and by the legislature. W. D. H.